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C. Moore

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Patent Application of:

Inventor(s)	:	Stengel, et al.
Filed	:	12/13/2001
Serial No.	:	10/017,986
Confirmation No.	:	8396
Group Art Unit	:	2817
Examiner	:	Henry Choe
Docket Number	:	CM03376J
Title	:	Distributed RF Power Amplifier With Load Compensation

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Assistant Commissioner for Patents
Washington, DC 20231

CERTIFICATE OF MAILING / FAX TRANSMISSION

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Applicant, Assignee or Reg. Representative: MICHELLE LARSON

Signature: _____ Date: March 6, 2003

RESPONSE TO OFFICE ACTION

Sir:

Responsive to the Office Action dated December 9, 2002, Applicants respectfully traverse the rejection and request reconsideration as follows.

REMARKS

This application has been carefully reviewed in view of the above office action in which claims 1-42 were under 35 U.S.C. §112, first paragraph. No prior art rejections were presented and the drawings were indicated to be allowable. The Office Action asserts that in claims 1, 15, 20, 28 and 36, "the limitation 'load measurement circuit and load compensation circuit' are recited. However the specification does not explain the nature of the load measurement circuit and load compensation circuit."

First of all, it is noted that the Examiner's citation of the limitations of "load measurement circuit and load compensation circuit" are the Examiner's own terms which do not appear in the claims as filed. Accordingly, reconsideration and allowance are respectfully requested.

Assuming the Examiner is referencing, for example, the "means for measuring" and "means for changing the drive signal" of claim 1 (and similar limitations), the undersigned respectfully submits that his assertion is erroneous and that in fact these limitations are fully disclosed in multiple exemplary embodiments in a manner fully adequate to enable one of ordinary skill in the art to make and use the invention. By way of example, and not limitation to the reading of the claims, exemplary circuit elements and functions have been disclosed for carrying out these circuit functions as follows:

- Fig. 4 illustrates element 160 as a directional coupler. Directional couplers are readily commercially available (or can be readily fabricated, e.g. from striplines) and have been in common use in the field of RF circuit design for decades. Such commercial availability is demonstrated, for example, by the MECA Electronics, Inc. web page attached hereto describing their product offerings. The undersigned used such commercially available directional couplers when working as an engineer some 25 years ago.

- Directional couplers are in common use (and have been for decades) to measure incident and reflected waves in radio frequency circuitry. This information can be used to derive information about changes in the load. For the Examiner's reference, the operation of directional couplers is described in detail in the accompanying directional coupler tutorial from www.ee.bilkent.edu.tr.

- The specification, in the paragraph spanning pages 7 and 8, describes the directional coupler as "providing an avenue for sampling and measurement of incident and reflected signals from the load Z_L in a load measurement and compensation function 170 (e.g., a routine running on a programmed processor) so that a drive signal can be generated."

- On the second full paragraph of page 8, the specification discloses "compensation of the input signal to the final stage of the distributed amplifier can be generated as illustrated using equation 3 above."

- Equation 3 describes the collector current of the transistor at the final stage of the distributed amplifier. The specification following equation 3 then explains that to obtain the above collector current described by equation 3, an input current is applied to the base of the transistor to achieve the desired current.

Thus, one of ordinary skill in the art would readily understand that, in certain embodiments consistent with the invention, one could use a directional coupler to measure the incident and reflected signals at the Nth stage of a distributed amplifier, then at a programmed processor calculate the load impedance therefrom in a standard known manner, use equation 3 to calculate a collector current required at the Nth transistor to achieve the desired load compensation, and apply a current to the base of the transistor to achieve this desired load compensation.

Thus, the claim elements believed to be referenced by the Examiner are in fact fully disclosed and enabled in the specification. By way of example and not limitation,

claim 1's "means for measuring a circuit parameter indicative of the load impedance" can thus be read upon a directional coupler measuring incident and reflected signals. The "means responsive to the measuring means for changing a drive signal produced by the drive signal synthesizer to compensate for the change in load impedance" can thus be read upon a programmed processor receiving the output of the directional coupler and calculating and generating therefrom a drive signal suitable for compensating for the change in the load impedance in the manner described above by using equation 3, and then deriving a drive signal suitable for producing the desired compensation for application to the final stage of the amplifier. Of course, claim 1 may equally well read upon other structures. Reconsideration and allowance are respectfully requested.

Regarding claim 15, this claim explicitly calls out the directional coupler and programmed processor used to carry out the functions claimed as described above. Reconsideration and allowance are respectfully requested.

Regarding claim 20, the above remarks regarding claim 1 are equally applicable. Reconsideration and allowance are respectfully requested.

Regarding claims 28 and 36, the measuring, calculating and applying actions can similarly read upon actions carried out in a directional coupler and a programmed processor in the manner described above, in certain embodiments. Claims 28 and 36 may also read upon actions carried out by other structures without limitation. Reconsideration and allowance are respectfully requested.

It should be noted that Applicants' specification describes in detail the virtual impedance concept used in connection with carrying out the load compensation process of the present invention. Many embodiments are possible other than the specific example described above. Thus, the above example is submitted as absolute proof that the Examiner's contention that the application fails under 35 U.S.C. 112 first paragraph is without basis in fact. But, as previously noted, the invention is not limited to this embodiment and this explanation should not be interpreted to suggest that it is.

In view of this communication, all claims are believed to be clearly in condition for allowance and such is respectfully requested at an early date. However, if the

Examiner feels that further issues remain, the undersigned requests the courtesy of a telephone call at 919-816-9981.

Respectfully submitted,

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